

Technical Appendix 5: Transport Assessment and Construction Traffic Management Plan

Penpergwm Solar Farm

23/06/2021



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STATEMENT OF PURPOSE

- 5.1. *This draft Construction Traffic Management Plan is being published to accompany pre-application consultation carried out under Articles 8 and 9 of the Development of National Significance (Procedure) (Wales) Order 2016. The formal pre-application consultation runs until 25th August 2021.*

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EXECUTIVE SUMMARY

- 5.2. This Construction Traffic Management Plan (CTMP) outlines the overall framework for managing the movement of construction and delivery traffic to and from the proposed Penpergwm Solar Farm, as well as considering the type of traffic it will generate. The traffic assessment for the operational and decommissioning phases is also considered.
- 5.3. Impacts from the operational phase of the site will only consist of between 10-15 LGVs per year. Most of the impacts will be during the short-term construction phase impacts and therefore it was felt that a CTMP is more appropriate than undertaking a full Transport Assessment. This CTMP considers elements of TAN18: Transport which are relevant to this project, namely to include details of the existing conditions and issues relating to the Proposed Development.
- 5.4. Increased volumes of traffic will be generated by the Proposed Development during the construction period. However, the overall volumes of traffic generated by the Proposed Development during the construction period are considered to be quite low. During the anticipated six-month construction period, a total of 736 HGV deliveries will be made to the Application Site. During the peak construction period there will be an approximate maximum of 15 daily HGV deliveries.
- 5.5. The haulage route will likely be from the A40. The delivery vehicles will travel along the A40 which is located to the west and south of the Application Site and exit onto The B4598. They will travel along this road, for approximately 4km before turning left at Penpergwm onto the local access road which serves the Proposed development. The access point is approximately 0.7km along this local access road.
- 5.6. The junction between the A40 and B4598 has an 'Unsuitable for HGVs' sign which is in relation to HGVs travelling on the B4598 from this junction. Although the B4598 is narrow, the section of road up to the site access point is suitable for HGV use. There is a turn on the road, in between the proposed site access point and the road which leads up to Great House Farm, which is very narrow and the alignment would make it unsuitable for HGVs. The sign is advisory only and it is likely that the main reason it is there is due to the beforementioned unsuitable turn. That being said, additional traffic management measures will be in place for the 800m stretch of road between the junction with the A40 and the site access point. This is likely to be in the form of a banksmen-controlled entry and exit from the site, or temporary traffic lights. This will be agreed prior to the construction stage of the Proposed Development with the local Council.
- 5.7. An Automatic Traffic Count (ATC) survey took place on the local road at the site entrance, on the 28th November 2020 and was left in place for one week. This was to collect real time data to determine the speed of road users. The survey concluded that the 85th percentile speed along this road averaged 33.6m/h eastbound and 32.2mph westbound. Using standard Stopping Distance (SSD) calculations, this equates to a required visibility splay dimension of

60m in the 'y' direction and 2.4m in the 'x' direction. TAN18 however sets out visibility dimensions based on the 85-percentile speed and this suggests that a 'y' direction of 70m is required. The 70m x 2.4m visibility splays are achievable the realignment of 58.1m of hedgerow, as well as the trimming back of 50.5m.

- 5.8. Initial swept path analysis suggests the existing entrance point will need to be widened to facilitate the construction vehicles and 10.6m of hedgerow to be removed.
- 5.9. A dedicated person will be appointed for the management of the delivery booking system during the construction stage. Temporary construction gates will be in place to stop vehicles passing over the PRoW/ORPA's freely and a banksman will be required to make sure there are no members of the public in the vicinity when vehicles are passing through.
- 5.10. The Applicant will conduct a pre- and post-construction condition survey of the local road from the access point to its junction with the B4598, with the Applicant liable to repair any damage to the road attributed to the construction of the Proposed Development.
- 5.11. The CTMP sets out a variety of specific mitigation measures that will be implemented during construction that will minimise the impact of the construction traffic on the environment and local communities; these include:
 - Limitations on working times and HGV scheduling;
 - Site security and signage; and,
 - Measures to control emissions of dust and other airborne contaminants.
- 5.12. This Construction Traffic Management Plan conforms to the policies and objectives of the Monmouthshire County Council Local Plan.

INTRODUCTION

Background

- 5.13. Neo Environmental Ltd has been appointed by Great House Energy Centre Ltd (the “Applicant”) to undertake a Construction Traffic Management Plan (CTMP) for a proposed solar farm and associated infrastructure (the “Proposed Development”) on lands circa 0.5km north of Penpergwm and c. 3.9km southeast of Abergavenny, Monmouthshire (the “Application Site”).
- 5.14. Please see **Figure 4 of Volume 2: Planning Application Drawings** for the layout of the Proposed Development.

Development Description

- 5.15. The Proposed Development consists of the construction of a 40MW solar farm and will comprise PV panels mounted on metal frames, inverter and transformer units, new access tracks, underground cabling, perimeter fencing with CCTV cameras and access gates, a temporary construction compound and all ancillary grid infrastructure and associated works.

Site Description

- 5.16. The Application Site is located on land 0.5km north of Penpergwm and c. 3.9km southeast of Abergavenny, Monmouthshire; the approximate centre point of which is Grid Reference E332954, N211435. Comprising 14 agricultural fields, the Application Site measures 70.03 hectares (ha) in total with only c. 17.61 hectares of the landscape under the solar arrays themselves. See **Figure 4 of Volume 2: Planning Application Drawings** for details.
- 5.17. Land within the Application Site itself is undulating, ranging between 61 – 140m Above Ordnance Datum (AOD) and consists of fields typically of medium scale, bound by a mixture of grassy field margins, semi-mature hedgerows, and intermittent trees (see **Figure 3 of Volume 2: Planning Application Drawings** for field numbers).
- 5.18. The Application Site is in an area with existing electricity infrastructure with a pylon line crossing Field 3 to the north and running in a north – south direction between Fields 6 and 7 and to the west of Field 8.
- 5.19. The local area is largely agricultural in nature, punctuated by individual properties and farmsteads; the nearest residential areas are the villages of Penpergwm and The Bryn; located 0.5km and 0.9km north respectively. Recreational Routes include two Public Rights of Way (PRoW) which pass through Fields 8, 9, 10 and 11 in the southern section of the site and an Other Route with Public Access (ORPA) which passes from Great House along the eastern boundary of Field 14 and through the treeline on the southern border of Fields 5, 6 and 7. Another PRoW passes along the northern boundary of Fields 1, 3 and 4.

- 5.20. While there are a number of drains and watercourses throughout the Application Site, including a small tributary of the Ffrwd Brook bordering Field 11, the site is entirely contained within Flood Zone A, an area described as having a “*Low probability*” of flooding.
- 5.21. The Application Site will be accessed via an improved farm access situated on the southern boundary. Traffic will approach the site entrance from the south using a local road from Penpergwmm for approximately 800m. Traffic will be routed to Penpergwmm from the north via the B4598. This road connects to the strategic road network south of Abergavenny at the A40 / A465 interchange.

Scope of the Assessment

- 5.22. The purpose of this CTMP report is to provide a framework for managing the movement of traffic to and from the Application Site, and to minimise the impact on the local road network during the construction period of the Proposed Development. The potential impact of traffic during the operation and decommissioning periods are also assessed.
- 5.23. This CTMP will provide details of:
- Traffic route identification and assessment;
 - Swept path analysis; and
 - Construction traffic management procedures.
- 5.24. This report is supported by the following appendices:
- **Appendix 5A: Figures**
 - Figure 5.1: Proposed Haul Route
 - Figure 5.2: Swept Path Analysis
 - Figure 5.3: Visibility Splay

Statement of Authority

- 5.25. This Construction Traffic Management Plan has been produced by Michael McGhee of Neo Environmental Ltd. Having completed a civil engineering degree in 2012, Michael has worked on over 1.5GW (approximately 50 individual sites) of solar farm Construction Traffic Management Plans across the UK and Ireland, as well as more detailed transport statements for major developments.

CONSULTATION

- 5.26. A pre-application response was received on the 5th August 2020. With regards to transport, the response stated:

“Highway Impact Policy MV1 required development to have an acceptable impact on the existing highway network. The Highway Officer attended the pre-application and provided verbal comments, but the written comments have not yet been received. They will be forwarded to the agent on receipt. In summary, the main concerns were in relation to traffic movement in commissioning and decommissioning the site. There was concern regarding the proposed access via a rural lane which is narrow and may not be suitable in its current form to accommodate the level of traffic and type of vehicles required to commission the site. It is recommended that additional information is submitted in respect of the traffic impact of the implementation of the development and how this will be managed to prevent an adverse impact on the local road network. It must also include details of the number and type of vehicles requires and any works required to improve the access road to facilitate commissioning of the site. Traffic implications of the decommissioning will also be required to demonstrate that reinstatement of the land is possible without adversely affecting the local highway network and, therefore, the impact is reversible. It is advisable that additional information is provided and a follow up pre-application meeting held to address the highway impacts in more detail. The impact in terms of the highway impact cannot be determined at this stage”.

- 5.27. The Highways Officer, Mark Davies, provided his feedback on the 23rd November 2020 and stated:

“I have no comments to make, the access and CTMP referenced in the EIAs statement is fine, we would not require any further information / details to support a development of this scale”.

- 5.28. The original plan was for the construction traffic to access site from the north, however this proposal was subsequently changed and therefore Mr Davies was reconsulted to ascertain his views on the new route which would come from Penpergwm from the south, he stated:

“I would agree and actively encourage anything that can be done to prevent over use of the immediate local network with construction vehicles.

I would not offer objection to utilising an existing field access that reduces the distance construction vehicles travel on the local network from the junction with the B4596”.

LEGISLATION

5.29. Future Wales – the National Plan 2040 (NP)¹ is the national development framework, setting the direction for development in Wales to 2040. It is a development plan with a strategy for addressing key national priorities through the planning system, including sustaining and developing a vibrant economy, achieving decarbonisation and climate-resilience, developing strong ecosystems and improving the health and well-being of our communities.

5.30. Policy 18 (Renewable and Low Carbon Energy Developments of National Significance) states that proposals for renewable and low carbon energy projects (including repowering) qualifying as Developments of National Significance will be permitted subject to Policy 17 (not related to transport) and the following criteria:

“there are no unacceptable adverse impacts on the transport network through the transportation of components or source fuels during its construction and/or ongoing operation”.

Planning Policy Wales (PPW): Edition 11²

5.31. Planning Policy Wales (PPW) Edition 11 was adopted by the Welsh Government in February 2021. This replaced the previously adopted PPW and sets out the land use planning policy for Wales. Chapter 5 of the PPW outlines the planning policy in relation to ‘Renewable and Low Carbon Energy’. With regards to transport, it states:

“Planning authorities should also identify and require suitable ways to avoid, mitigate or compensate adverse impacts of renewable and low carbon energy development. The construction, operation, decommissioning, remediation and aftercare of proposals should take into account:

- *the capacity of, and effects on the transportation network”*

5.32. It also goes on to state, in Chapter 4 ‘Active and Social Places’, that *“Planning applications for developments, including changes of use, falling into the categories identified in TAN 18: Transport must be accompanied by a Transport Assessment”*. The Proposed Development type isn’t outlined in Tan 18³; however, it is felt that due to the limited number of operational movements associated with the project, a Transport Assessment is not required. Most of the impacts will be during the short-term construction phase and therefore it is felt that a CTMP

¹ Ministry of Housing, Communities & Local Government, National Planning Policy Framework, Feb 2019. Available at <https://gov.wales/sites/default/files/publications/2021-02/future-wales-the-national-plan-2040.pdf>

² Welsh Government, Planning Policy Wales (PPW): Edition 11. Feb 2021, Available at https://gov.wales/sites/default/files/publications/2021-02/planning-policy-wales-edition-11_0.pdf

³ Welsh Assembly Government, in TAN 18: Transport, March 2007, Available at <https://gov.wales/sites/default/files/publications/2018-09/tan18-transport.pdf>

is more appropriate. This CTMP will consider elements of TAN18 which are relevant to this project, namely to include details of the existing conditions and issues relating to the Proposed Development.

- 5.33. TAN 18 also outlines standard visibility splay dimensions. This is outlined in Table A of Annex B which can be viewed in **Table 5-1**.

Table 5 - 1: Table A from Annex B of TAN 18

Where road traffic speed known: (85th percentile wet weather)							
Observed traffic speed (kph)	120	100	85	70	60	50	
(mph)	75	62	53	44	37	30	
SSD (metres)	295	215	160	120	90	70	

Review of Development Plan Policy

Monmouthshire County Council Adopted Local Plan 2011 - 2021

- 5.34. The Monmouthshire County Council Adopted Local Plan (2011 – 2021)⁴ (LP) was adopted by the county council in February 2014 and sets out the Council’s vision and objectives for the development and use of land in Monmouthshire, together with the policies and proposals to implement them over a 10 year period to 2021. Policies relevant to the development include:

Policy MV1 – Proposed Developments and Highway Considerations

All planning applications for developments which are likely to have a significant impact on trip generation and travel demand must, as appropriate, be accompanied by a Transport Assessment that includes a Transport Implementation Strategy for the development detailing the measures proposed to improve access by public transport, walking and cycling and reduce the number and impacts of car journeys associated with the proposal.

Development that is likely to create significant and unacceptable additional traffic growth in relation to the capacity of the existing road network and / or fails to provide a safe and easy access for road users will not be permitted, unless appropriate proposals for related improvements to the highway system or a contribution towards mitigating traffic management / reduction measures are made.

Where appropriate, development proposals will be expected to satisfy:

⁴Monmouthshire County Council, Monmouthshire County Council Adopted Local Plan 2011 – 2021 (Feb 2014), Available at <https://www.monmouthshire.gov.uk/app/uploads/2017/05/Adopted-Local-Development-Plan-with-PDF-tags.pdf>

a) the adopted highway design guide; and

b) the adopted parking guidelines.

In town centres, if the parking provision cannot reasonably be achieved on-site, then suitable alternative provision should be made”.

Policy MV3 – Public Rights of Way

Development that would obstruct or adversely affect a public right of way will not be permitted unless satisfactory provision is made which maintains the convenience, safety and visual amenity offered by the original right of way and this will be reflected in the layout and conditions / obligations on any permission granted.

Proposals to improve or create public rights of way will be permitted where they add to the utility and enjoyment of the network, including providing missing links in otherwise continuous routes, upgrading paths to bridleways or enhancing the green infrastructure network, provided they give rise to no unacceptable amenity or environmental impacts and comply with legislative requirements. Such proposals should be designed with the convenience, safety and visual amenity of users in mind and should also take into account the needs of those with limited mobility, the impact on the adjoining rights of way network and connectivity of that network.

- 5.35. The LP also states: “PPW (Chapter 8 Transport) and TAN 18 set out clear statements of national planning policy in relation to traffic management, development control considerations, transport assessments, travel plans and access to development and should be referred to accordingly”, and these documents have both been considered within this plan.

TRAFFIC ROUTE IDENTIFICATION AND ASSESSMENT

- 5.36. The chosen delivery route and subsequent CTMP is based upon information provided by the Applicant as well as a thorough review of the local and national roads in the vicinity of the Application Site.

Site Access

- 5.37. The Application Site will be accessed from the local road which runs north from Penpergwm. The speed limit on local rural roads such as these is 60m/h as there are no repeater signs or street lighting. However, it was observed that vehicles are highly likely to travel at speeds lower than the statutory speed limit near the site entrance, as there is a sharp bend on the road nearby with limited visibility. This section of road, at the site entrance, contains no carriageway markings and is approximately 3.5 metres wide. There are no pedestrian facilities along this section of road and the carriageway is in good condition.
- 5.38. An Automatic Traffic Count (ATC) survey took place on the local road at the site entrance, on the 28th November 2020 and was left in place for one week. This was to collect real time data to determine the speed of road users. The survey concluded that the 85th percentile speed along this road averaged 33.6m/h eastbound and 32.2mph westbound. Using standard Stopping Distance (SSD) calculations, this equates to a required visibility splay dimension of 60m in the 'y' direction and 2.4m in the 'x' direction. TAN18 however sets out visibility dimensions based on the 85-percentile speed and this suggests that a 'y' direction of 70m is required. The 70m x 2.4m visibility splays are achievable the realignment of 58.1m of hedgerow, as well as the trimming back of 50.5m, see **Figure 5.3: Appendix 5A**.
- 5.39. Initial swept path analysis suggests the existing entrance point will need to be widened to facilitate the construction vehicles. **Figure 5.2: Appendix 5A** shows the revised access point where there will be 10.6m of hedgerow to be removed.
- 5.40. The Applicant will conduct a pre- and post-construction condition survey of the local road from the access point to its junction with the B4598, (see **Figure 5.1 Appendix 5A**), with the Applicant liable to repair any damage to the road attributed to the construction of the Proposed Development.

Internal Site Tracks

- 5.41. Additional and upgraded access tracks will be constructed to allow access for the construction, operation, maintenance and decommissioning of the solar panels and associated infrastructure.
- 5.42. Tracks will measure 4m wide, however, this will be increased at bends. All new tracks will be unpaved and constructed from local stone. Geosynthetic reinforcement or soil stabilisation may be used to reduce the depth of track construction. The surface will be a compacted

granular material (crushed rock) up to an approximate thickness of 0.3m, dependent on the ground conditions. Details of the access track construction can be found in drawing **Figure 6 of Volume 2: Planning Application Drawings**.

- 5.43. Load bearing crane hardstanding areas with a high load bearing capacity will be required during construction to support cranes as they lift the transformers from the delivery vehicles. The site tracks can be used for this purpose, with some localised widening where required.
- 5.44. The access tracks will be left in situ after completion of the solar farm construction, as they will provide:
- Access for the Proposed Development maintenance and repair works;
 - Access for the Landowner; and
 - Access for decommissioning of the Proposed Development.
- 5.45. Once the solar farm is decommissioned, unless required by the landowner and agreed with the council, all new access tracks will be removed.

Proposed Haul Route

- 5.46. The proposed haul route has been identified by considering the ability of the route to physically accommodate the required vehicles, in addition to the sensitivity of the route to potential disruption by the movements of traffic to and from the site.
- 5.47. The haulage route will likely be from the A40. The delivery vehicles will travel along the A40 which is located to the west and south of the Application Site and exit onto The B4598. They will travel along this road, for approximately 4km before turning left at Penpergwm onto the local access road which serves the Proposed development. The access point is approximately 0.7km along this local access road.
- 5.48. The junction between the A40 and B4598 has an 'Unsuitable for HGVs' sign which is in relation to HGVs travelling on the B4598 from this junction. Although the B4598 is narrow, the section of road up to the site access point is suitable for HGV use. There is a turn on the road, in between the proposed site access point and the road which leads up to Great House Farm, which is very narrow and the alignment would make it unsuitable for HGVs. The sign is advisory only and it is likely that the main reason it is there is due to the beforementioned unsuitable turn. That being said, additional traffic management measures will be in place for the 800m stretch of road between the junction with the A40 and the site access point. This is likely to be in the form of a banksmen-controlled entry and exit from the site, or temporary traffic lights. This will be agreed prior to the construction stage of the Proposed Development with the local Council.
- 5.49. A map showing the proposed local access route is presented in **Figure 5.1: Appendix 5A**.

5.50. Autotrack analysis was carried out at a junction on the haul route for a 16.5m articulated vehicle representing the largest vehicle that will be used to access the Application Site for the Proposed Development (**Figure 5.2: Appendix 5A**).

Route Assessment

5.51. This route assessment was conducted as a desk-based exercise. Where required, swept path analysis has been conducted using Autotrack software to model the movement of the most onerous load to determine what actions are required to address any issues identified.

5.52. As per the specifications provided, the most onerous loads for the purpose of the swept path analysis are the deliveries of the modules and mounting systems. As part of the swept path analysis, the following vehicle was used:

- UK Max Length Articulated Vehicle of 16.5m in total length

5.53. The exact dimensions of this vehicle and turning details can be found on the drawing in **Figures 5.2: Appendix 5A**.

5.54. The analysis was conducted using Ordnance Survey (OS) mapping data.

5.55. No allowances have been made for the provision of independent driver-operated rear steering. The approved haulage operator for the project will confirm final vehicle types prior to construction.

5.56. The load bearing capacity of any bridges or structures has not been measured. As the Proposed Development will not require abnormal roads, any bridges on the main transport network should be capable of carrying all the transport loads. As there will be no abnormal roads, the consultation point regarding the protection of bridges, culverts and other structures will not apply.

5.57. All traffic management and safety implications will be considered by suitably qualified and experienced personnel when arranging the transit of the loads and can be agreed through a suitably worded condition following planning approval.

5.58. **Table 5-1** provides a brief commentary of the route analysis at specific points on the haul route. These points can also be viewed on **Figure 5.2 Appendix 5A**.

Table 5 - 1: Route Analysis

Ref	Manoeuvre Required	Analysis	Required Action	Swept Path Drawings
1	Vehicles will need to take a left-hand turn from the local access	The redesigned access point has been designed so that the	Small section of hedgerow will	Figure 5.2 of Appendix 5A

	road into the site entrance point.	largest construction vehicles can access the site.	need to be removed	
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Summary of Enabling Works

- 5.59. As the proposal includes an upgraded access point (see **Figure 5.2 Appendix 5A**), enabling work will be required for access into the Application Site. This will include top soil strip and land clearing as well as the removal of 10.6m of hedgerow. Design details of the access track can be found in drawing **Figure 6 of Volume 2: Planning Application Drawings**.
- 5.60. The 70m x 2.4m visibility splays are achievable the realignment of 58.1m of hedgerow, as well as the trimming back of 50.5m, see **Figure 5.3: Appendix 5A**).

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CONSTRUCTION TRAFFIC MANAGEMENT

Construction Programme

- 5.61. Construction of the Proposed Development is anticipated to occur over a six-month period. During this period, there will be a combination of HGVs (for the component and material deliveries) and cars/vans (for construction staff) on site. HGV movements are expected to be the most intense during the first few weeks of construction, reducing in numbers towards the final weeks. Car/van movements are expected to be constant throughout.
- 5.62. **Table 5-2** shows the estimated amount of deliveries and movements for the main infrastructure.

Table 5 - 2: Estimates HGV Deliveries for construction equipment and infrastructure

TRANSPORT	ESTIMATED NUMBER OF VEHICLES	MOVEMENTS
Delivery of Mounting Frames	80	160
Delivery of Modules	160	320
Delivery of Inverters/Transformers/Grid	25	50
Delivery of Cables	30	60
Delivery of Plant Equipment	25	50
Delivery of Gravel Hard Core Material	396	792
Delivery of Fencing	20	40
Total	736	1472

- 5.63. Additional site visits may be required due to site conditions, weather restrictions, and due to unforeseen circumstances and therefore, these numbers should be treated as a guideline for planning purposes only. In total, the construction of the solar farm is expected to give rise to 736 HGV deliveries over the six-month construction period. A daily maximum of approximately 15 HGV deliveries (30 HGV movements) is anticipated.
- 5.64. The expected HGV volumes are based on best estimates of trips generated for similar sized solar farms and will be subject to amendments based on local conditions and contractor working practices.

Delivery Booking System

- 5.65. On a weekly basis, the appointed Site Manager will evaluate details of the daily profile of deliveries proposed for the upcoming week. Through discussions with hauliers, the Site Manager will ensure that that construction deliveries are managed in an efficient manner, with minimal disruption and delays.
- 5.66. It is proposed that temporary signage would be used to highlight the entrance to the site and to direct construction traffic to the site via the public road network. The Applicant will provide banksmen to assist with the manoeuvring of delivery vehicles to and from the site, as well as internal site movements.
- 5.67. Hauliers will be required to contact the Site Manager to give an indicative delivery time, to ensure that the delivery space and banksmen are ready for their arrival on site.
- 5.68. To avoid any vehicles waiting, sufficient time will be provided between deliveries to allow for any delays (such as loading/unloading taking longer than expected).
- 5.69. Deliveries will be managed and scheduled to ensure that no vehicles would have to wait on the surrounding road network.

Timing Restrictions

- 5.70. All traffic movements will be carried out between the hours of 07.00 to 19.00 on Monday to Friday and 08.00 to 16.00 on Saturdays. Outside of these times works are limited to a) commissioning and testing and b) Works required in an emergency where there is the potential of harm or damage to personnel, plant, equipment, or the environment, provided the developer retrospectively notifies the Council of such works within 24 hours of their occurrence.
- 5.71. Deliveries, where possible, will be scheduled to avoid peak times where relevant, e.g. avoiding rush hours and after school drop off and pick up times.

Temporary Site Construction Compound

- 5.72. A temporary construction compound (see **Figure 7 of Volume 2: Planning Application Drawings**) will be required during the construction phase of the Proposed Development. The proposed location of the compound is shown on the submitted planning drawings and consists of an area of approximately 4000m² in size, in an abnormal shape. The compound will contain the following:
- Temporary site facilities (Port-a-Cabin type) to be used for site office and welfare facilities, including welfare facilities with provision for sealed waste storage and removal;
 - Container storage unit(s) for tools and equipment storage;

- Container storage unit(s) for components and materials;
- Refuelling compound for construction vehicles and machinery;
- Chemical toilets;
- Adequate parking area for cars, construction vehicles and machinery;
- Designated skips for construction waste; and
- Wheel washing facility.

Construction Parking

- 5.73. It is forecast that there will be approximately 25 staff on site at any one time during the construction period, although this will vary subject to the overall programme of works. It is likely that there will be a degree of vehicle sharing by staff and therefore, less than 25 staff vehicles (estimated maximum at 10-15 per day at peak construction periods) are expected to arrive on site each day. Labour vehicle sharing will be actively encouraged to reduce vehicular movements.
- 5.74. Upon entrance/exit to and from the site, workers vehicles will report directly to the area of hard standing at the temporary site construction compound near the site entrance (see **Figure 7 of Volume 2: Planning Application Drawings**), where there will be sufficient space for parking and turning. Site opening and closing will be outside morning and evening peak traffic times, minimising local traffic disruption during busy periods.
- 5.75. No parking will be allowed for construction workers on the public road network in the vicinity of the site. A number of additional unscheduled visits may be required throughout the construction period for site inspections and due to unforeseen circumstances, which is accounted for in the existing car parking plans.

Turning Facilities

- 5.76. The construction compound has been designed to provide adequate space for vehicle manoeuvring and turning, and all HGV deliveries will report here for unloading (see **Figure 7 of Volume 2: Planning Application Drawings**). The turning area will ensure that all vehicles will ingress and egress in a forward gear to maintain safety on the public highway.

Site Security

- 5.77. For security and safety purposes, the Proposed Development will be closed to the general public via security fencing and a locked gate. The security fence installed around the perimeter of the solar farm will be erected at the start of the construction programme and will remain for the duration of the operation until decommissioning of the solar farm.

- 5.78. Access to the construction site during construction hours will be controlled by personnel located at the entrance of the development. All visitors will sign in and out with security. Visitors to the site will be given a Health and Safety site induction, provided with Personal Protective Equipment (PPE), and will remain with an appropriately trained escort at all times.

Bridleways and Public Right of Ways (PRoW)

- 5.79. Two Public Rights of Way (PRoW), and an Other Route with Public Access (ORPA) are found in the southern part of the site. Part of PRoW 368/55/1 passes through Fields 8 and 9 to the south connecting Great House with the access to farmsteads to the south. Part of PRoW 368/56/1 passes through Fields 10 and 11 in the south eastern part of the site connecting Great House with the minor road on the south eastern site boundary. The ORPA passes from Great House between Fields 7 and 9 and through the treeline on the southern border of Fields 5, 6 and 7.
- 5.80. Recreational routes are also located close to the Application Site, PRoW 368/182/1 passes along the northern boundary of Fields 1, 3 and 4. PRoW 368/10/1 and, 368/11/1 pass with c. 0.2km of Great House and eastern Fields 4 and 10, providing recreational connectivity north of the Application Site.
- 5.81. These will all remain open during the construction period; however, some sections will need to be closed for short periods of time as vehicles pass through them. At these points, there will be construction gates which will be closed unless a vehicle is required to access them and a banksman will make sure that there are no members of the public on the PRoW/ORPA before opening the construction gates and allowing the traffic to pass through.

Operational Period

- 5.82. The operational phase of the solar farm is anticipated to have negligible trip generation potential with approximately 10-15 Light Goods Vehicles (LGVs) expected every year for scheduled maintenance checks, with additional visits required to attend to remedial issues when necessary. The operational access point will use the Great House Farm entrance to the site.

Decommissioning Period

- 5.83. The number of HGVs required for the decommissioning period will be slightly higher than the construction phase due to the materials not being as neatly packed as when shipped from factory conditions. Whilst the construction phase had a total of approximately 736 movements, the decommissioning phase will have a total of circa 810 movements (estimate includes a 10% increase on the construction stage). This increase is not considered to be significant.

MITIGATION

5.84. The impact of the Proposed Development has been identified as **temporary** in nature and associated with short construction and decommissioning phases only. It is still important that any impact is minimised as far as possible and, in light of this, the following mitigation measures have been considered:

- A dedicated Site Manager will be appointed for the management of the delivery booking system during the construction stage. It will also be this person's duty to make sure haulage companies use the chosen haul route (See **Figure 5.1: Appendix 5A**), without fail.
- Temporary construction gates will be in place to stop vehicles passing over the PRow/ORPA's freely and a banksman will be required to make sure there are no members of the public in the vicinity when vehicles are passing through.
- The Applicant will conduct a pre- and post-construction condition survey of the local road from the access point to its junction with the B4598, with the Applicant liable to repair any damage to the road attributed to the construction of the Proposed Development.
- Traffic movements will be limited to 07:00 - 18:00 on Monday to Friday and 08:00 – 16:00 on Saturdays, unless otherwise agreed in writing with the Council. Deliveries will be scheduled to avoid morning and evening peak hours. This will avoid HGV traffic arriving during the morning peak hours, creating conflict with local residents' commute or school run. Construction personnel will be encouraged to car-pool, or to travel to site in minibuses.
- During the construction phase, clear construction warning signs will be placed on the local access road leading to the Proposed Development access, as well as on the B4598 in accordance with Chapter 8 of the Traffic Signs Manual. The Site Entrance will also be appropriately signed. Access to the construction site will be controlled by onsite personnel and all visitors will be asked to sign in and out of the site by security/site personnel. Site visitors will receive a suitable Health and Safety site induction and Personal Protective Equipment (PPE) will be worn.
- To control, prevent and minimise dirt on the access route and emissions of dust and other airborne contaminants during the construction works, the following mitigation measures will also be implemented:

- Wheel washing equipment will be available and used onsite within the construction compound, as required, to prevent the transfer of dirt and stones onto the public highway. All drivers will be required to check that their vehicle is free of dirt, stones and dust prior to departing from the site;
 - Wheel washing facilities will consist of a water bowser with pressure washer.
 - The bowser will contain water only and no other additives.
 - Run-off from this activity will be directed to the drainage situated on the lower boundary of the construction compound.
- Dampening of site roads to minimise dust emissions;
- Any soil stockpiles will be covered and / or lightly tracked when left for extended periods of time;
- Drivers will adopt driving practices that minimise dust generation including a 5m/h internal access road speed limit; and,
- Any dust generating activities will be avoided or minimised, wherever practical, during windy conditions.
- Once construction of the Proposed Development is completed, all portacabins, machinery and equipment will be removed and hard standing excavated. The area will be regraded with the stockpiled topsoil to a natural profile.

SUMMARY

- 5.85. This CTMP outlined the overall framework for managing the movement of construction and delivery traffic to and from the Proposed Development, as well as considering the type of traffic it will generate. The traffic assessment for the operational and decommissioning phases were also considered.
- 5.86. Impacts from the operational phase of the site will only consist of between 10-15 LGVs per year. Most of the impacts will be during the short-term construction phase impacts and therefore it was felt that a CTMP is more appropriate than undertaking a full Transport Assessment. This CTMP considers elements of TAN18: Transport which are relevant to this project, namely to include details of the existing conditions and issues relating to the Proposed Development.
- 5.87. Increased volumes of traffic will be generated by the Proposed Development during the construction period. However, the overall volumes of traffic generated by the Proposed Development during the construction period are considered to be quite low. During the anticipated six-month construction period, a total of 736 HGV deliveries will be made to the Application Site. During the peak construction period there will be an approximate maximum of 15 daily HGV deliveries.
- 5.88. The haulage route will likely be from the A40. The delivery vehicles will travel along the A40 which is located to the west and south of the Application Site and exit onto The B4598. They will travel along this road, for approximately 4km before turning left at Penpergwm onto the local access road which serves the Proposed development. The access point is approximately 0.7km along this local access road.
- 5.89. The junction between the A40 and B4598 has an 'Unsuitable for HGVs' sign which is in relation to HGVs travelling on the B4598 from this junction. Although the B4598 is narrow, the section of road up to the site access point is suitable for HGV use. There is a turn on the road, in between the proposed site access point and the road which leads up to Great House Farm, which is very narrow and the alignment would make it unsuitable for HGVs. The sign is advisory only and it is likely that the main reason it is there is due to the beforementioned unsuitable turn. That being said, additional traffic management measures will be in place for the 800m stretch of road between the junction with the A40 and the site access point. This is likely to be in the form of a banksmen-controlled entry and exit from the site, or temporary traffic lights. This will be agreed prior to the construction stage of the Proposed Development with the local Council.
- 5.90. An Automatic Traffic Count (ATC) survey took place on the local road at the site entrance, on the 28th November 2020 and was left in place for one week. This was to collect real time data to determine the speed of road users. The survey concluded that the 85th percentile speed along this road averaged 33.6m/h eastbound and 32.2mph westbound. Using standard Stopping Distance (SSD) calculations, this equates to a required visibility splay dimension of

60m in the 'y' direction and 2.4m in the 'x' direction. TAN18 however sets out visibility dimensions based on the 85-percentile speed and this suggests that a 'y' direction of 70m is required. The 70m x 2.4m visibility splays are achievable the realignment of 58.1m of hedgerow, as well as the trimming back of 50.5m.

- 5.91. Initial swept path analysis suggests the existing entrance point will need to be widened to facilitate the construction vehicles and 10.6m of hedgerow to be removed.
- 5.92. A dedicated person will be appointed for the management of the delivery booking system during the construction stage. Temporary construction gates will be in place to stop vehicles passing over the PRoW/ORPA's freely and a banksman will be required to make sure there are no members of the public in the vicinity when vehicles are passing through.
- 5.93. The Applicant will conduct a pre- and post-construction condition survey of the local road from the access point to its junction with the B4598, with the Applicant liable to repair any damage to the road attributed to the construction of the Proposed Development.
- 5.94. The CTMP sets out a variety of specific mitigation measures that will be implemented during construction that will minimise the impact of the construction traffic on the environment and local communities; these include:
- Limitations on working times and HGV scheduling;
 - Site security and signage; and,
 - Measures to control emissions of dust and other airborne contaminants.
- 5.95. This Construction Traffic Management Plan conforms to the policies and objectives of the LP.

APPENDICES

Appendix 5A - Figures

- Figure 5.1: Proposed Haul Route
- Figure 5.2: Swept Path Analysis
- Figure 5.3: Visibility Splay

DRAFT





Appendix 5A: Figures

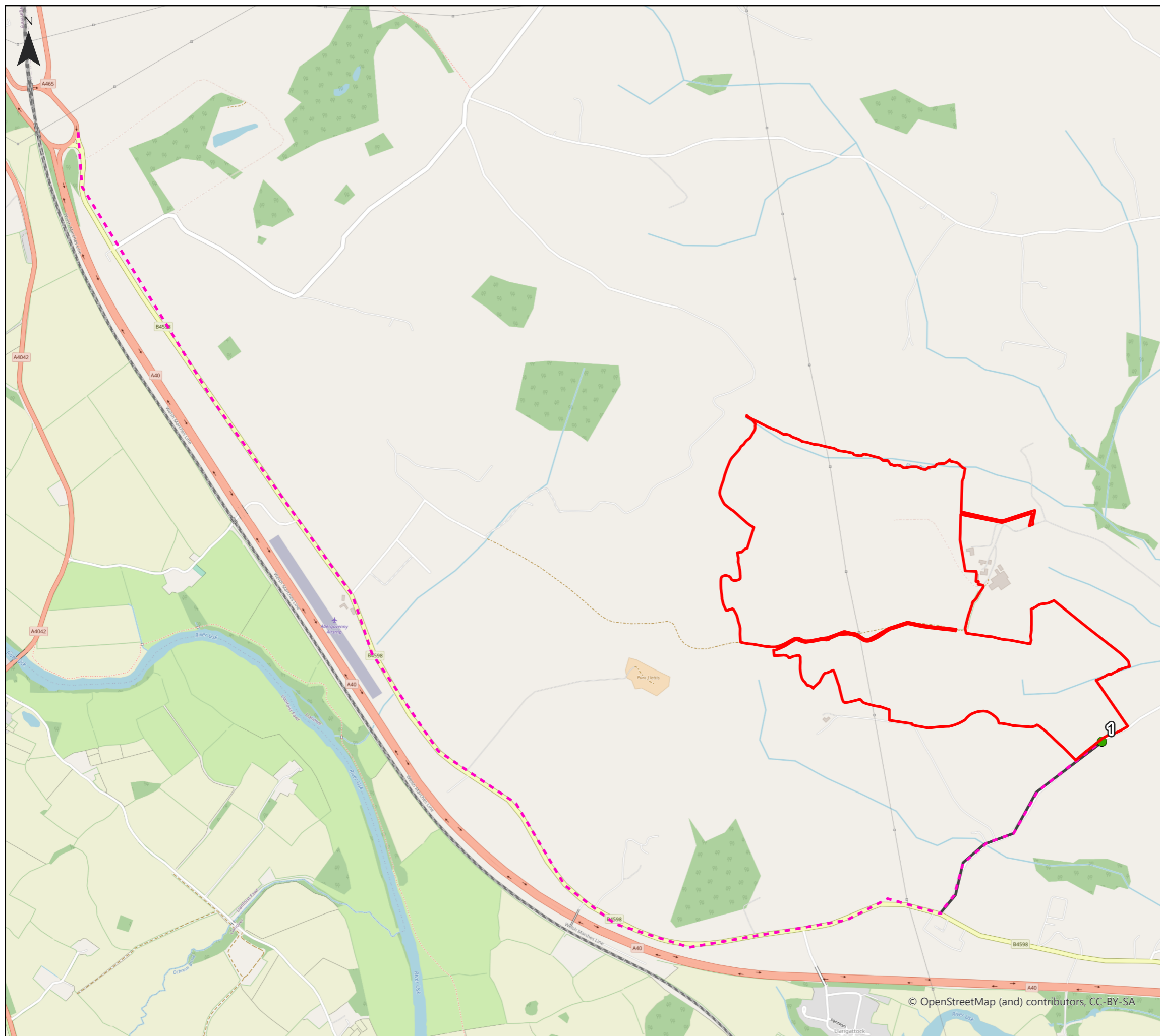
DRAFT



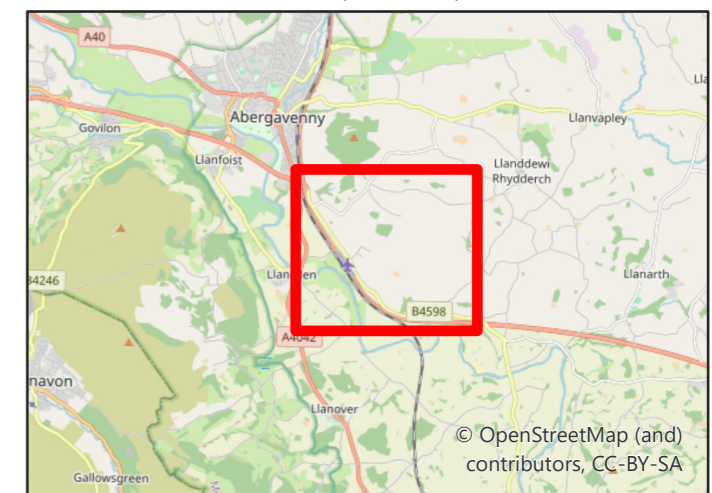
Penpergwm Solar Farm Proposed Haul Route Figure 5.1

Key

-  Development Boundary
-  Proposed Haul Route
-  Route Analysis
-  Condition Survey Extents



Neo Office Address:
Cinnamon House, Crab Lane, WA2 0XP

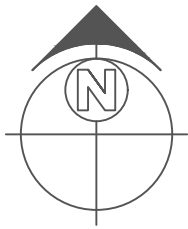


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

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Date: 26/04/2021
Drawn By: Michael McGhee
Scale (A3): 1:12,000
Drawing No: NEO00668/0721/A





Key

-  Wheel Swept Path
-  Vehicle Overhang Swept Path
-  Vehicle Centre Line
-  Vehicle
-  Hedgerow to be removed

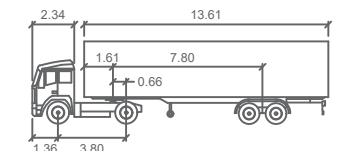
Drawn By: Jamie McGhee
 Address: Wright Business Centre
 1 Lonmay Road
 Glasgow
 G33 4EL

Notes:

- Simulated Speed - 5mph
- Actual vehicle dimensions may vary. Route should be assessed by haulier with regard to the vehicle combinations prior to transport.
- No allowances made for rear steering.
- Does not show load.

Disclaimer:

- This drawing is copyright and must not be copied in part or in whole unless agreed in writing by Neo Environmental Ltd.
- All dimensions are to be checked by the contractor prior to the commencement of work. Any discrepancy should be reported immediately to Neo Environmental Ltd.
- All work to be carried out in accordance with local authority, statutory authority and health & safety requirements.



Max Length Vehicle

Tractor Width	: 2.55	Lock to Lock Time	: 6.0
Trailer Width	: 2.55	Steering Angle	: 50.0
Tractor Track	: 2.55	Articulating Angle	: 70.0
Trailer Track	: 2.55		

Ver.	Date	Comments

A 28/04/2021



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Project: Penpergwym Solar Farm
Client: Renewable Connections

Drawing: Swept Path Analysis

Project No.: NEO00668

Drawing No.: NEO00788_0471_A Figure 5.2

Drawn: JM **Checked:** MM **Approved:** PN

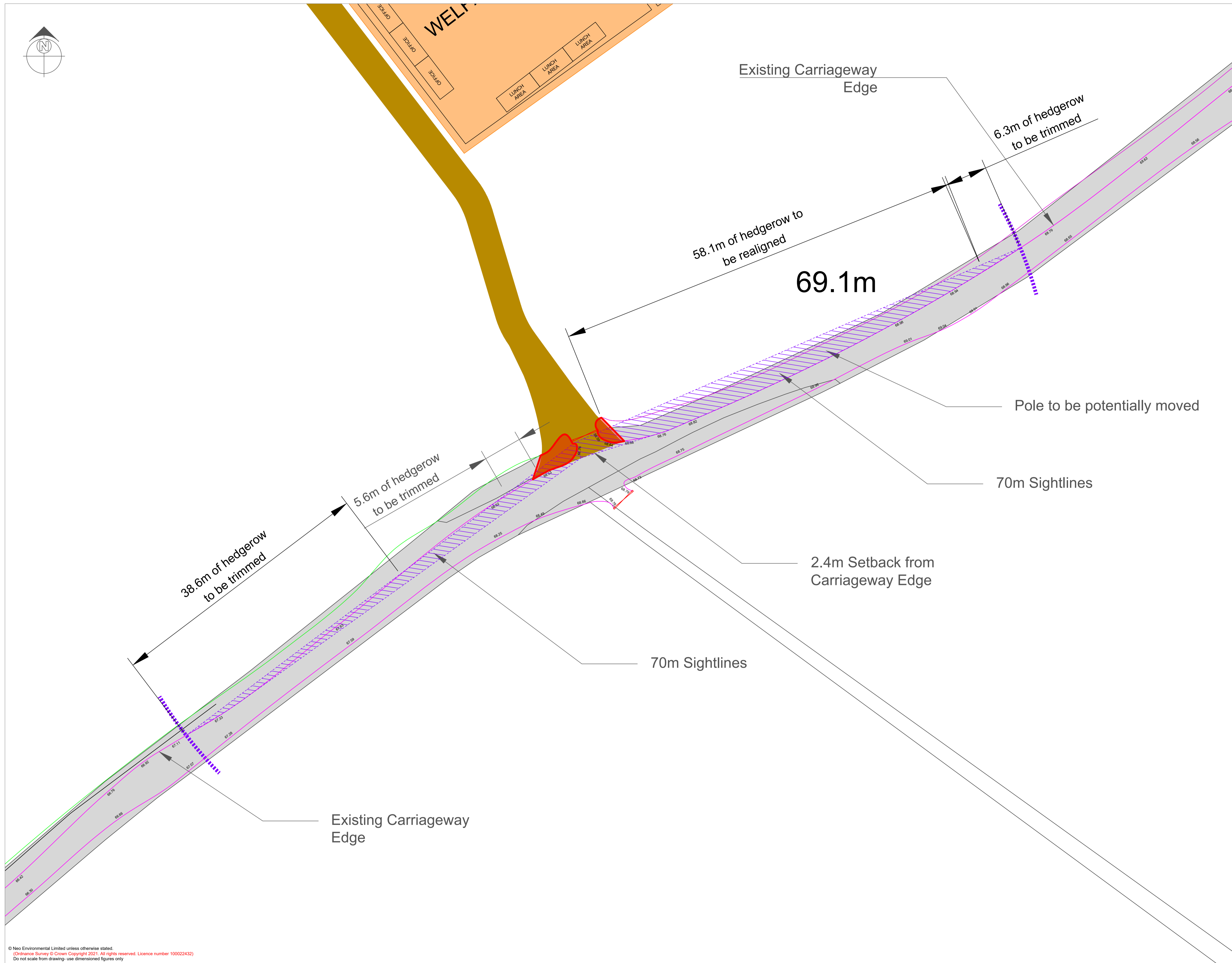
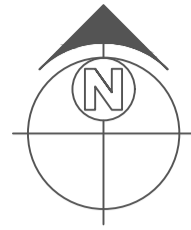
Scale: 1:375 @ A3 **Revision:** A

Date: 28 April 2021

69.1m

2.6m of hedgerow to be removed

8.0m of hedgerow to be removed



Key

- Visibility Splay
- Hedgerow to be removed
Note: Removed as part of the access track upgrades. (See Figure 5.2)

Drawn By: Jamie McGhee
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Ver.	Date	Comments

A 28/04/2021



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Project:	Pennergwym Solar Farm	
Client:	Renewable Connection	
Drawing:	Visibility Splay	
Project No.:	NEO00668	
Drawing No.:	NEO00668_048I_A Figure 5.3	
Drawn:	JM	Checked: MM Approved: PN
Scale:	1:250 @ A1	Revision:
Date:	28 April 2021	A

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